ATLAS OF EXTERNAL DISEASES OF THE EYE

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By

HUMPHREY NEAME

F R C S

Hon Ophthalmic Surgeon,
Royal London Ophthalmic Hospital

Senior Hon Ophthalmic Surgeon,
University College Hospital

Consulting Ophthalmic Surgeon,
Dr Barnardo's Homes

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PREFACE

THE illustrations comprising this Atlas of External Diseases of the Eye are derived largely from drawings made for the author from individual patients during the last ten years Several are from the "Handbook of Ophthalmology," by Neame and Wilhamson-Noble, published by J & A Churchill Ltd Others are from drawings kindly lent for reproduction by ophthalmic surgeons, to whom the author here expresses his sincere gratitude The names of the owners are placed beneath the respective reproductions The majority of the drawings represent, as far as possible, typical examples of the commoner conditions encountered in private and hospital practice It was considered to be of more value to practitioners and students that a brief description of the disease illustrated and of its treatment should accompany the figures, rather than that detailed notes of the individual cases should be recorded, as had commonly been the case in previous works of the kind

The arrangement of the plates is in four main groups as indicated in the heading to the Table of Contents The constituents of each group are placed, as far as possible in the order of the following pathological sub-groups Congenital traumatic, inflammatory degenerative neoplastic

The author acknowledges with grateful thanks his indebtedness to Mr Charles B Goulden for his services in reading the proofs and for many helpful suggestions

The drawings were all made in the Drawing Department of Messrs Theodore Hamblin from whom much help was received in the preparation of the originals for reproduction

To Messrs J & A Churchill Ltd acknowledgements are due for their skilful arrangement of the text and figures, so that the reader should experience no difficulty in finding what he may require

HUMPHREY NEAME

London

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LACRYMAL ABSCESS

Synonym *Acute dacryocystitis*

Symptoms Rapid onset of pain Some general malaise and pyrexia

Diagnosis Marked increase of swelling over situation of lacrymal sac, redness and œdema of overlying skin and lower eyelid and cheek

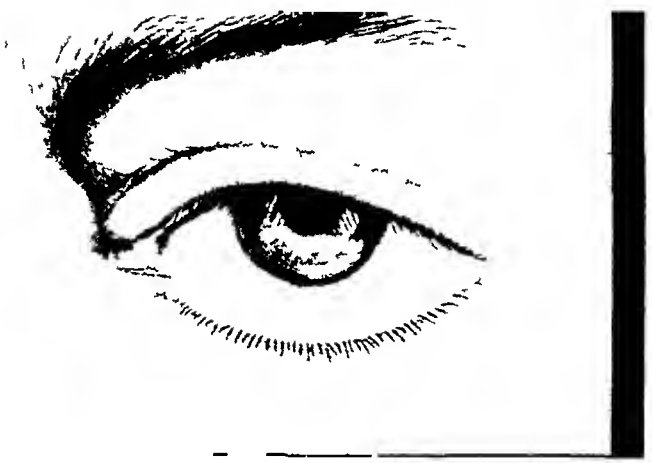
Ætiology Occurs in children and adults with lacrymal obstruction Inflammation may spread into nasal duct from nose (simple catarrhal inflammation, lupus vulgaris, and rarely congenital or tertiary syphilis), followed by mucocele and chronic dacryocystitis

Pathology Complete occlusion of nasal duct due to fibrous tissue proliferation in its wall and stenosis of canaliculi, leading to increase in volume of contents of sac and proliferation of micro-organisms causing extension of inflammation through ulcerated sac wall Acute inflammation of connective tissue *outside* sac follows and usually results in suppuration

Prognosis May be serious Serpiginous ulceration of cornea may arise therefrom

Treatment Incision and drainage of abscess After subsidence of acute inflammation an attempt should be made to restore drainage of the sac into the nose Later if necessary, removal of whole of the lacrymal sac by operation, or alternatively dacryo-cysto-rhinostomy

PLATE 1



LACRYMAL ABSCESS

A case of moderate severity in which the swelling remained localised

(*From Handbook of Ophthalmology by Nettie and Williamson Noble*)

HORDEOLUM

Synonym *Stye*

Symptoms Painful lid swelling

Diagnosis Localised redness, swelling (situated in line of lashes) and pain and tenderness at the lid margin

Ætiology General debility, constipation, refractive errors

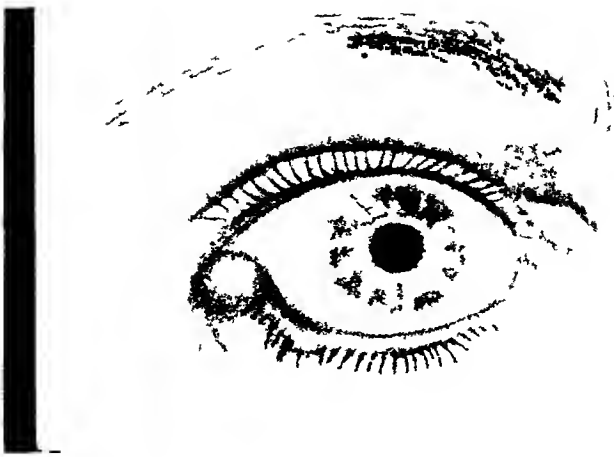
Pathology Abscess starting in sebaceous gland of a lash follicle

Course After a day or two, small yellow spot appears in centre of swelling and from this yellow centre a lash is usually seen to project Occasionally extreme œdema of lid results so that the eye cannot be opened

Prognosis Rapid recovery usually follows treatment

Treatment Application of hot fomentations and hot bathing until yellow centre of pointing abscess is visible the abscess being allowed to drain by removal of projecting eyelash or, rarely, by incision Correction of refractive error Autogenous staphylococcal vaccine (as a last resort) in the event of repeated occurrence of styes

PLATE 2



HORDEOLUM (Stye)

A large stye is present near the outer canthus and pus is pointing. A smaller stye lies to the nasal side.

(From 'Handbook of Ophthalmology,' by Neame and Williamson Noble.)

CHALAZION

Synonyms *Meibomian cyst Tarsal cyst*

Symptoms Swelling (or swellings) small, globular and hard beneath skin of lid

Diagnosis Centre of swelling about 3 mm from lid margin and well separated from line of lashes Eversion of eyelid shows red discoloration on conjunctival surface in site corresponding with position of swelling

Ætiology General debility

Pathology Swelling due to accumulation of granulation tissue (small lymphocytes epithelioid cells and occasionally giant cells) within Meibomian gland resulting from chronic inflammation following obstruction of duct of gland

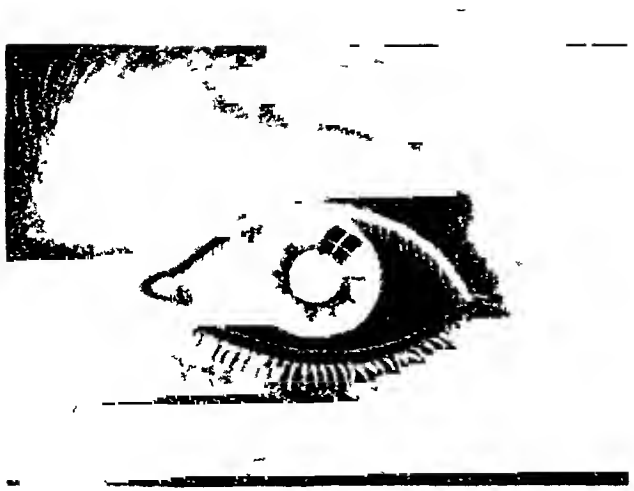
Course If no treatment adopted contents may be forced through conjunctiva and pushed forwards between lids as a small red polypoid mass Occasionally suppuration supervenes and resulting painful abscess bursts through conjunctiva with relief of pain

Prognosis Good May recur

Treatment (*a*) Very small chalazia (i) massage, (ii) use of ung hydrarg ox flav 1 per cent ,

(*b*) With discoloration of conjunctival surface over affected gland, surgical treatment (incision and curetting) necessary

PLATE 3



CHALAZION (Meibomian Cyst)

There is complete absence of signs of skin inflammation and the centre of the swelling is several millimetres from the lash border of the eyelid

(*From "Handbook of Ophthalmology" by Keane and Williamson Noble*)

BLEPHARITIS

Symptoms Irritation burning or soreness of lids

Blepharitis sicca or *squamosa* often precedes the following varieties and is recognised by slight redness of lid margins and scurfy desquamation Associated with seborrhœa (dandruff) of scalp

B pustulosa	*B ulcerosa*
Diagnosis Presence of minute pustules at orifices of lashes	Yellow adherent crusts of dried discharge surround bases of lashes

Æthology One of commonest affections of eyelid Slight degrees (*e g* blepharitis sicca) caused by exposure to irritation (heat sun wind dust smoke) and by lack of sleep or much close work associated with uncorrected errors of refraction Chronic conjunctivitis or lacrymal obstruction inflame lid margins, infection carried by fingers from ulcers in the external nares associated with measles

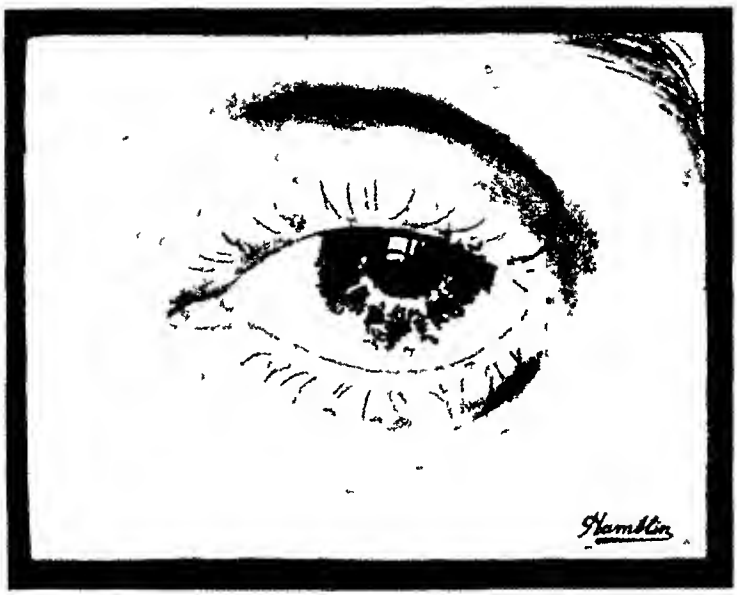
B pustulosa	*B ulcerosa*
Pathology Openings of follicles present pustules	Small ulcer develops around orifice of lash follicle, crusts forming by drying of discharge

Prognosis Usually yields to treatment, liable to recurrence in long-standing cases Prolonged blepharitis results in loss and irregular growth of eyelashes (trichiasis) and atrophy of lid margin—recognised by rounding off of anterior and posterior borders of lid margin

Treatment (1) Removal of cause of irritation Attention to errors of refraction

(2) Attention to general health by administration of

PLATE 4



BLEPHARITIS PUSTULOSA

A few pustules are seen at the roots of the eyelashes

tonics fresh air, good food, vaccines sometimes of use in intractable cases

(3) Local treatment (*a*) Removal of scales or crusts by cleansing with lint moistened with sodii bicarb ℥i, liq carbonis det (Wright) ℥i, aq dest ad ℥viii, (*b*) application of mild antiseptic or astringent ointment (dilute ammoniated mercury ointment 1 per cent) in acute stages, and ung hydrarg ox flav (1 per cent or 2 per cent) when inflammation has partly subsided Direct application of ultraviolet light to the eyelids by special lamp

PLATE 5

BLEPHARITIS ULCEROSA (Stage of Atrophy)

There is marked atrophy of the lid margin with loss of eyelashes, dryness of the skin of the lid margin, and some excoriation of the outer canthus, as well as redness of the whole lid margin

(*From Handbook of Ophthalmology, by Keame and Williamson Noble*)

BASAL-CELLED CARCINOMA OF EYELID

Synonym *Rodent ulcer*

Symptoms Flat button-like projection in skin of eyelid, enlarging in the course of several years

Diagnosis Centre of plaque subject to formation of scab or crust Bleeds slightly at intervals

Ætiology Basal-celled carcinoma occurs as frequently in this as in any situation

Pathology Masses of epithelial cells arising from basal layers extend laterally under the epidermis No cell nests or prickle cells present

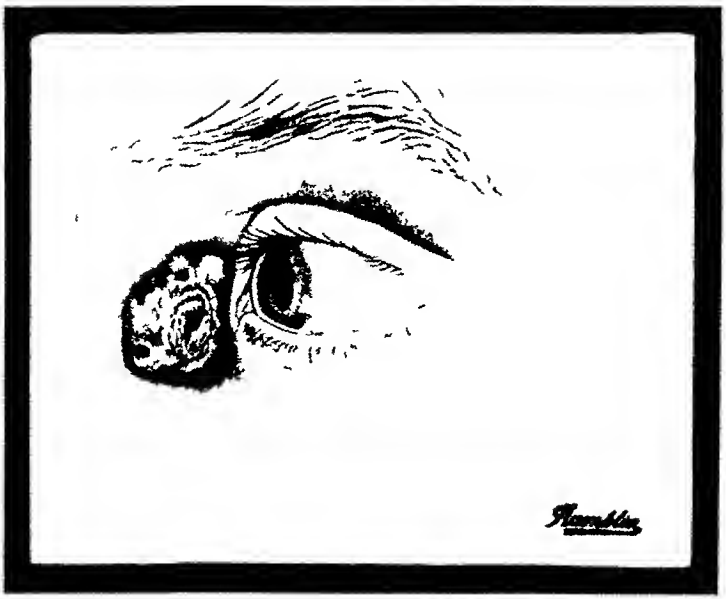
Course Eventually centre of surface becomes ulcerated Raised, rolled or beaded edge extends

Prognosis Good if treated early Unsuccessfully treated cases extremely grave owing to extensive destruction of facial skin and bones and opening up of orbital or nasal cavities

Treatment (*a*) Early excision, or

(*b*) Sufficiently heavy doses of radium by subcutaneous insertion of radon seeds or radium needles deep to the growth Constant supervision for a year or more necessary—recurrence sometimes after a long period in deeper layers of skin

PLATE 6



BASAL CELLED CARCINOMA OF THE EYELID
(Rodent Ulcer)

The growth, of long duration, is situated in a site common for rodent ulcer It shows an irregular thickened edge, and a dried crust or scab near its centre

(*With acknowledgements to Mr A D Griffith*)

SUBCONJUNCTIVAL HÆMORRHAGE

Synonym *Conjunctival hæmorrhage*

Symptoms Dark red discoloration of white of the eye

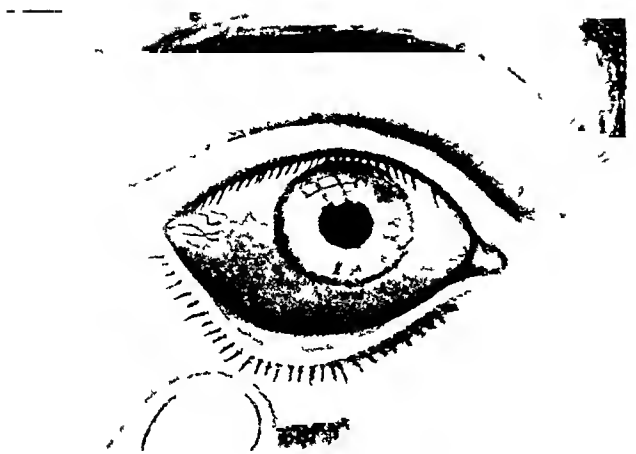
Diagnosis Discoloured area uniform in colour with sharply defined margin

Ætiology Over-exertion (in which a normal or unhealthy vessel is ruptured) or small punctured wound of conjunctiva causing damage to a venule Sometimes occurs spontaneously in healthy young adults

Pathology Comparable to bruises of the skin, becoming absorbed in the course of one or two weeks

Prognosis Good

Treatment None required



SUBCONJUNCTIVAL HÆMORRHAGE

The red area is uniform in colour with a sharply-defined margin

(*From 'Handbook of Ophthalmology, by Neame and Williamson Noble*)

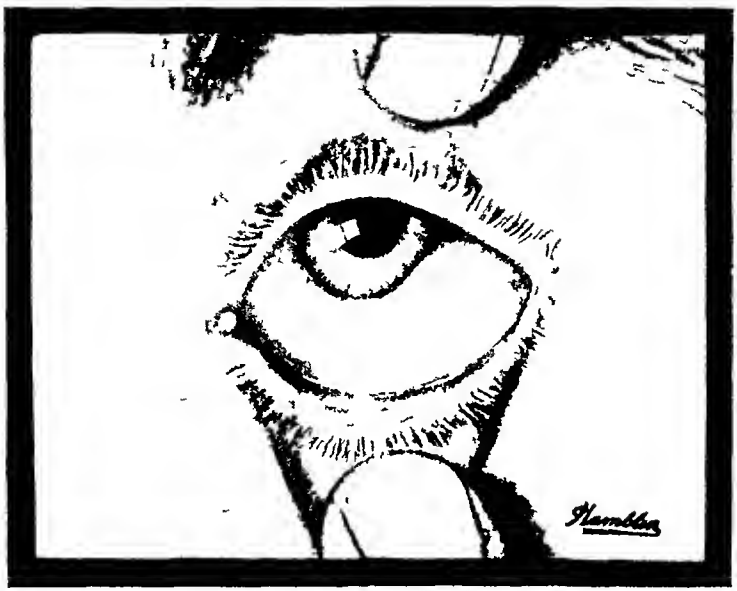
CHEMOSIS CONJUNCTIVÆ

Synonym *Œdema conjunctivæ*

Symptoms This condition develops especially as the result of a stye or a suppurating chalazion situated near the outer canthus The swelling is pale red and soft, almost like a large bleb or bulla On retraction of the lower lid, the swollen conjunctiva pouts forwards over it

Treatment That of the condition in which it develops

PLATE 8



CHEMOSIS (ŒDEMA) CONJUNCTIVÆ

The condition, in this case, is the result of a stye near the outer angle, now recovering

MUCO-PURULENT CONJUNCTIVITIS

Synonym *Catarrhal conjunctivitis*

Symptoms Burning and pain

Diagnosis Mucopurulent discharge (tenacious, stringy) Small conjunctival hæmorrhages

Ætiology Caused by Koch-Weeks bacillus Highly contagious Epidemics in schools

Course Usually lasts seven to fourteen days

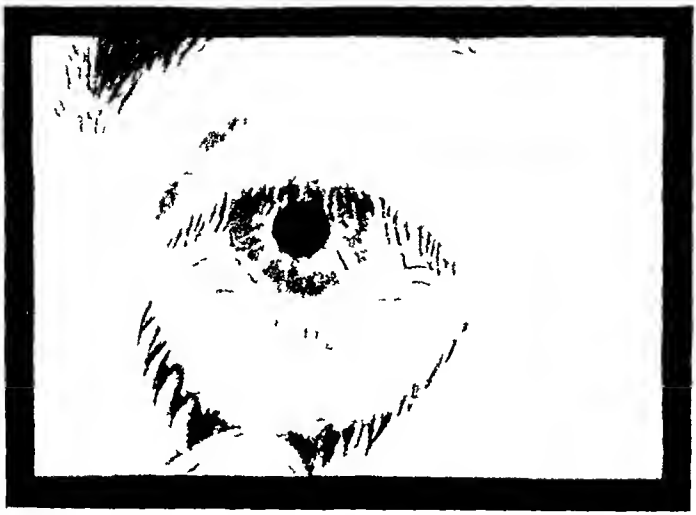
Prognosis Good

Treatment (1) Frequent bathing with warm boric acid lotion grs x to $\bar{3}$i or warm normal saline Oculentum acidi borici at night

(2) Keep eye uncovered

Acute Cases (*a*) At intervals of two or three days, apply 1 per cent or 2 per cent silver nitrate in aq dest to palpebral conjunctivæ and fornices by a pledget of cotton-wool wrapped round a thin glass rod (*N B* This solution should not be dropped into eye for fear of injuring cornea) Colloidal silver preparations used as drops are liable to produce argyrosis (see p 40)

PLATE 9



MUCO-PURULENT CONJUNCTIVITIS

Marked vascular engorgement of the palpebral and peripheral ocular conjunctiva, with muco pus and dried discharge accumulated around the lashes

(*From "Handbook of Ophthalmology," by Keame and Williamson Noble*)

ANGULAR CONJUNCTIVITIS

Symptoms Considerable discomfort but only slight redness Irritation usually worse in evenings Conjunctival discharge slight

Diagnosis Vascular engorgement at *angles* of conjunctival sac especially mesial and lateral parts of white of eye seen in palpebral fissure and inner and outer parts of lid margin After long duration, excoriation of skin at outer canthus develops

Ætiology Causative organism is diplo-bacillus (Morax-Axenfeld)

Course If not cured rapidly may lead to chronic catarrhal conjunctivitis

Prognosis Liable to relapse or become chronic

Treatment As (1) and (2) (mucopurulent conjunctivitis)

(3) Use of drops—zinc sulphate grs i ad ℥i t d or zinc sulphate lotion gr ½ ad ℥i, and ointment—iethyol grs ii, zinc oxide grs iii lanoline ℥i vaseline flav ad ℥ii

(*N B* Cocaine should be avoided and adrenalin should only be used on occasions for cosmetic reasons)

PLATE 10

ANGULAR CONJUNCTIVITIS

The congestion is most marked laterally on the ocular conjunctiva and on the lid margins towards the inner and outer canthus

(*From Handbook of Ophthalmology, by Keame and Williamson Noble*)

PURULENT CONJUNCTIVITIS

A In infants	*B In adults*
Synonym *Ophthalmia neonatorum*	*Purulent ophthalmia*
Symptoms and Signs Within two or three days of birth, eyelids stuck together by discharge Eyelids dusky red and swollen	Considerable pain Usually monocular Purulent discharge, watering, discomfort redness and swelling of eyelids

Diagnosis Eyelids swollen, dusky red colour Lashes caked with secretion Pus escapes on separation of lids Conjunctiva intensely congested, œdematous, and exudes blood on manipulation of lids, palpebral conjunctiva has velvety appearance History or signs of vaginitis or urethritis in the mother in the case of infants, or in adults affected with severe conjunctivitis (*N B* "Notifiable" if occurring within twenty-one days of birth)

Ætiology In adults usually gonococcus, by direct infection of conjunctiva, in infants, sometimes pneumococcus or streptococcus Only 50 to 60 per cent of ophthalmia neonatorum are due to the gonococcus In mild cases, presence of micro organisms difficult to demonstrate

Course Daily examination of condition of cornea *important* Slight roughening of cornea and haze ("ground-glass appearance") followed by actual loss of surface (revealed by drop of 2 per cent fluorescein) indicate ulceration of cornea

Prognosis Good, if ulceration avoided If not, ulceration may result in corneal opacity, perforation of cornea with iris prolapse, anterior polar cataract with subsequent serious impairment of vision or actual blindness

Treatment (*Preventive*) Clean eyelids with *damp* wool immediately head is born, instil few drops 1 per cent silver nitrate solution	Confine patient to bed lying on side of affected eye with Buller's shield over healthy eye Prophylactic treatment to healthy eye (organic silver preparation)

Local Treatment Regular and frequent cleansing of lids and conjunctival sac with boric acid lotion, or perchloride of mercury 1 in 8,000, boric acid ointment at night to lid margins, painting of conjunctiva every two days with 1 per cent or 2 per cent silver nitrate solution In very *severe cases* conjunctiva should be irrigated every hour with cold eusol 1 in 7, and then a drop of oil emulsion of acriflavine of 1 in 1,500 If eyelids swell and become tense, divide external canthus When suppuration supervenes, bathe with warm boric acid lotion and paint with silver nitrate To *relieve pain*, apply leeches to temple, cold compresses of boric acid to eye, frequent bathing with cool boric acid lotion, and aspirin or even opium by mouth

PLATE 11

PURULENT CONJUNCTIVITIS (Gonococcal)

The drawing was made three days after the onset of watering, discomfort and redness of the eye in an adult Infection was carried by the finger Perforating corneal ulcer resulted about twelve days after the onset

VERNAL CATARRH

Synonyms *Spring catarrh conjunctivitis vernalis conjunctivitis æstivalis*

Symptoms Burning irritating sensation Slight stringy mucous discharge

(*a*) *Palpebral*

Diagnosis Confined to conjunctiva of lids (particularly upper) Irregular pink nodules project from tarsal conjunctiva

(*b*) *Ocular*

Rarer in British Isles Finely nodular jelly-like excrescences around limbus or larger swellings on one portion only of this region Colour paler than palpebral variety

Conjunctiva of milky-white semi-opaque appearance Smears reveal abundant eosinophile leucocytes (*cf* trachoma)

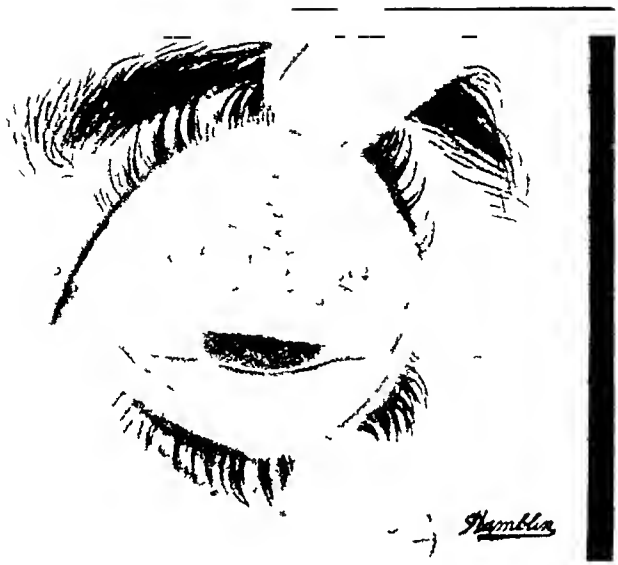
Ætiology Rare Cause unknown Occurs mostly in children or young adults Usually appears in warm months, recurring regularly for several years

Pathology Nodules hard (*cf* trachoma) Mainly fibrous tissue with irregular downgrowths of conjunctival epithelium in surface

Prognosis Self-limiting disease diminishing in severity and ceasing after variable period Duration unaffected by treatment

Treatment Irritation frequently relieved by hazeline ℥xxx ad ℥i or dilute acetic acid drops (1 part in 10 of aq dest) or $\frac{1}{1000}$ adrenalin solution three or four times daily Carbon dioxide snow has been used to excrescences, also radium but results variable Change of climate sometimes efficacious Increased comfort obtained with tinted goggles

PLATE 12



VERNAL CATARRH (Palpebral Variety)

There are well marked rather flat-topped nodules on the upper palpebra conjunctiva with moderate conjunctival congestion Slight muco pus, and eosinophiles in the discharge The nodules are as large towards the very margin of the lid as at the upper tarsal border

TRACHOMA

A Stage of granulations	*B Stage of cicatrisation*
Symptoms Symptoms of conjunctivitis of some duration Irritation "Grittiness" of eyes Slight discharge	
Diagnosis Palpebral conjunctiva diffusely red, velvety appearance, gelatinous-looking rounded nodules, especially along upper border of tarsal plate, soft (*cf* vernal catarrh) and can be expressed with forceps	After disappearance of granulations, scarring affects conjunctival surface of upper lid in form of grey-white line, due to scar tissue, parallel with lid margin Other marks and lines of scar tissue visible, radiating from above (Plate 15)

(*Cf* follicular conjunctivitis, where follicles are smaller and more superficial arranged in lines like beads on a thread mainly confined to lower lid, and never cause conjunctival scarring or pannus)

PLATE 13

TRACHOMA (Stage of Granulations)

The granulations are rounded, somewhat translucent, and largest towards the upper tarsal border

(With acknowledgements to Mr C I Gimblett)

Ætiology. Frequency of occurrence varies with poverty and squalor Prolific among North African natives, in Russia and Eastern Europe In other countries of Europe, mainly limited to slum areas Prevalent in Central Asia, China and Japan In U S A it occurs in Eastern cities, is common among Indians, severe among American natives of Middle West Affects children and adults alike

Pathology Cell inclusions common in well-established cases Conjunctival papillæ (velvety appearance) due to thickening of conjunctiva by cell infiltration beneath epithelium and by exaggeration of normal microscopic papillæ Granulations are beneath epithelium and consist in conglomerations of cells Cellular infiltration affects all tissues involved in trachoma Pannus consists in cell infiltration and vascularisation between corneal epithelium and Bowman's membrane, in advanced cases spreading through Bowman's membrane to substantia propria

Complications and Sequelæ Lids—blepharitis, trichiasis, entropion Conjunctiva—scarring and symblepharon Xerosis Cornea — pannus, sometimes causing serious diminution of vision Corneal ulceration rare

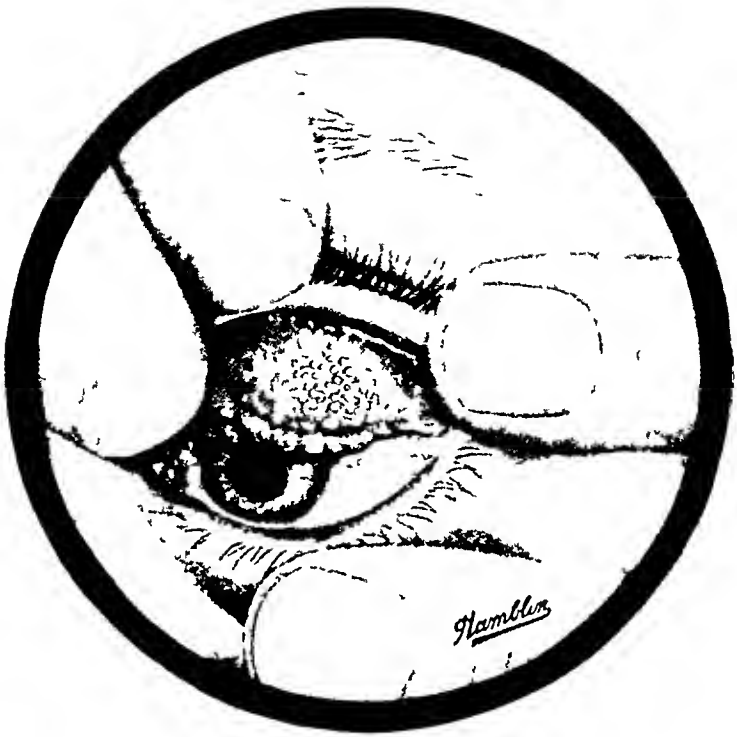
A Stage of granulations

Course In later stage, conjunctival vessels of limbus encroach upon cornea forming pannus, and cornea becomes hazy or opaque

B Stage of cicatrisation

Scarring of fornix and ocular conjunctiva is accompanied by shrinking of the latter, producing symblepharon

PLATE 14



TRACHOMA

In addition to granulations near the upper tarsal border, the tarsal conjunctiva shows a papillary condition

Prognosis Fairly good with treatment prolonged for several years Chronic conjunctivitis may continue

Treatment

A Stage of granulations

(1) Expression of granulations followed by repeated painting of affected conjunctiva with 2 per cent silver nitrate solution and frequent use of boric acid lotion

(2) Scarification of conjunctiva and brushing at regular intervals with 1 in 500 mercury perchloride and frequent use of perchloride lotion 1 in 7,000

(3) Cauterisation of granulations with Paquelin or galvano-cautery

B Stage of cicatrisation

Copper sulphate (pointed bluestone pencil) to conjunctiva once or twice weekly with zinc sulphate (1 per cent) lotion or drops t d , or ung cupri citratis (grs viii ad ℥i) once daily with repeated bathing with boric acid lotion

PLATE 15

TRACHOMA IN AN INDIAN (Stage of Cicatrisation)

The main band of scar tissue lies parallel with the length of the eyelid, but has numerous processes extending upwards and downwards The eyelid is narrow in the vertical direction

(With acknowledgements to the London School of Hygiene and Tropical Medicine)

ARGYROSIS CONJUNCTIVÆ

Synonym *Silver staining of conjunctiva*

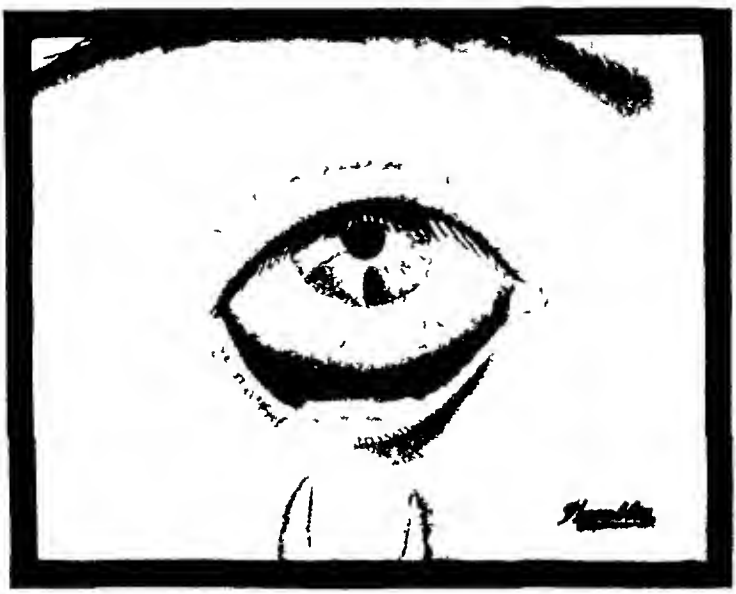
Diagnosis Greenish discoloration of conjunctiva

Ætiology and Pathology History of prolonged use of silver preparations, thus causing deposit of silver within the deep conjunctival tissue

Prognosis Staining is permanent

Treatment Avoidance of use of silver preparations for more than a few weeks

PLATE 16



ARGYROSIS CONJUNCTIVÆ

(With acknowledgements to Sir Arnold Lawson)

PTERYGIUM

Diagnosis Triangular-shaped flattened prominence occurring near nasal or temporal margin of cornea, encroaching upon cornea at an early stage

Ætiology Occurs in middle-aged persons, particularly in the Tropics, who have led a life of exposure to wind or dust

Pathology A fold of thickened conjunctiva which is raised and extends on to the cornea

Course As condition advances, pupillary area is encroached upon and vision seriously affected

Prognosis Recurrence usual Repeated operations necessary

Treatment Operation (various methods of removal) and plastic repair of defect

PLATE 17

PTERYGIUM IN AN INDIAN

The pterygium involves almost the whole of the pupillary area of the cornea

(With acknowledgements to the London School of Hygiene and Tropical Medicine)

MELANOMA CONJUNCTIVÆ

Synonym *Pigmented nævus, pigmented mole*

Symptoms Presence of dark brown spot on ocular conjunctiva

Diagnosis Usually situated at or near the limbus Freely movable with conjunctiva

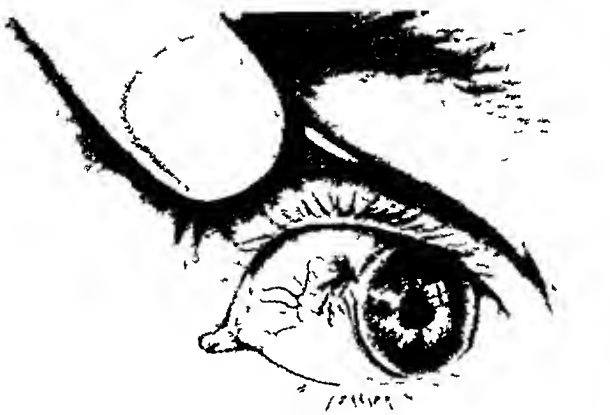
Ætiology Congenital

Pathology Growth composed of groups or rows of cuboidal cells embedded in fibrous tissue Deeply pigmented, pigment being situated within the cells

Prognosis Occasionally develops into malignant growth This is of grave import

Treatment Excision for cosmetic reasons or if it increases in size

PLATE 18



MELANOMA CONJUNCTIVÆ

The patient, a male aged sixty, had noticed a brown spot since the age of fourteen when the eye had been injured by sulphuric acid It did not alter appreciably between the years 1926 and 1932

(*Case shown at the Royal Society of Medicine, Section of Ophthalmology*, 1926)

CYST OF CONJUNCTIVA

Signs Gradual development of swelling on ocular conjunctiva or in fornix No discomfort apart from that due to size of swelling

Diagnosis Gradual increase of translucent cystic swelling, usually movable over the sclerotic

Ætiology Commonly the result of past injury, as by a scratch or puncture (implantation cyst) Sometimes a lymphatic cyst, as is probably the case in the illustration (Plate 19)

Pathology In implantation cyst, section shows a lining of epithelium one or more layers thick corresponding with conjunctival epithelium

Prognosis Excellent

Treatment Excision of cyst, or removal of its superficial wall

PLATE 19

CYST OF CONJUNCTIVA

Male, aged sixty-five years

(With acknowledgements to Mr R Foster Moore)

CYST OF CONJUNCTIVA

Signs Gradual development of swelling on ocular conjunctiva or in fornix No discomfort apart from that due to size of swelling

Diagnosis Gradual increase of translucent cystic swelling, usually movable over the sclerotic

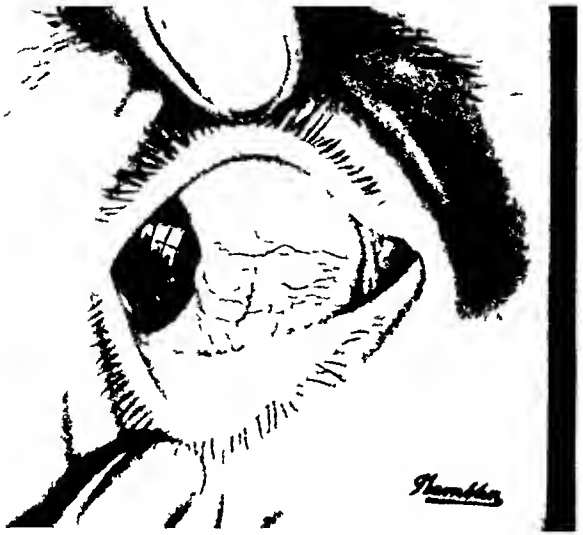
Ætiology Commonly the result of past injury, as by a scratch or puncture (implantation cyst)

Pathology In implantation cyst section shows a lining of epithelium one or more layers thick corresponding with conjunctival epithelium

Prognosis Excellent

Treatment Excision of cyst, or removal of its superficial wall

PLATE 20



CYST OF CONJUNCTIVA

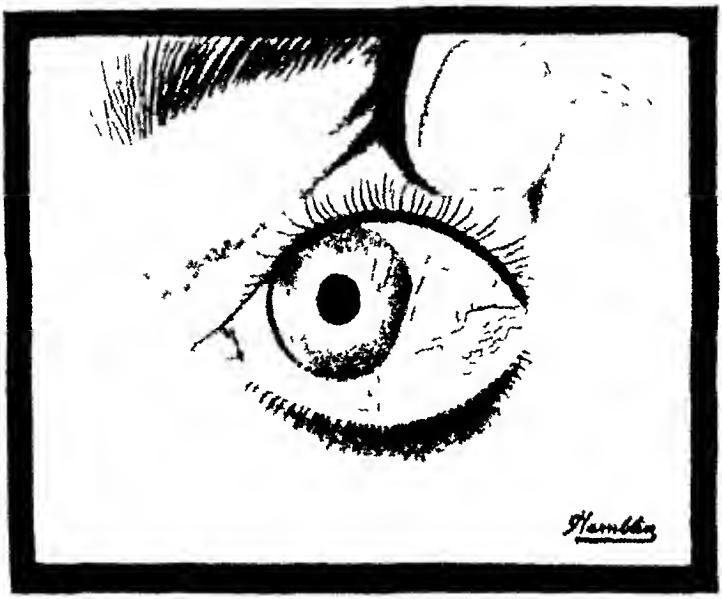
Female, aged sixty-six years

EPIBULBAR GRANULOMA

This condition was diagnosed as a malignant growth and excised from the surface of the eyeball The illustration shows its close resemblance to such a growth, excepting in its bilobular formation

Pathology Histological sections showed a mass of granulation tissue The operation wound healed satisfactorily No definite cause was found for the condition

PLATE 21



EPIBULBAR GRANULOMA

(With acknowledgements to Mr L Wolff)

EPIBULBAR GROWTH

(Papilloma with early signs of malignancy)

Signs Fleshy red swelling, starting at or near the limbus, and gradually increasing in size

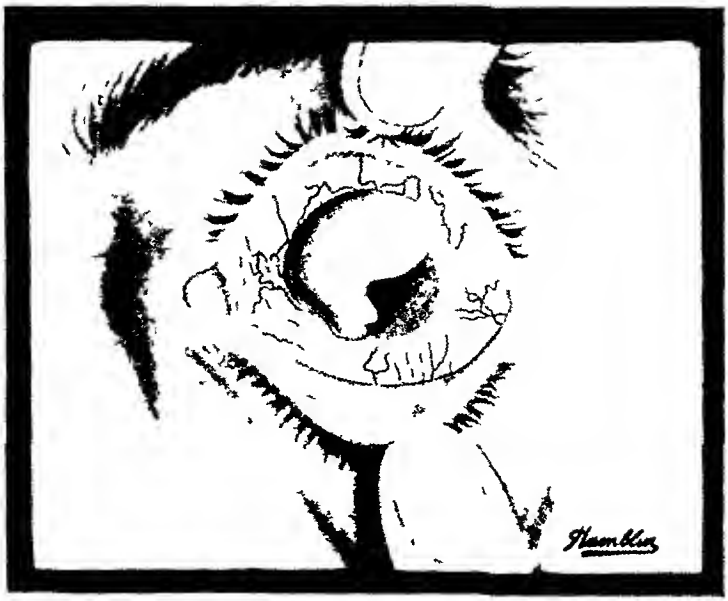
Diagnosis Condition distinguished from sarcoma by greater projection over surface and by irregularity Histological section confirms diagnosis

Pathology Soft warty epithelial type of growth, in this case showing commencing invasion of the sclera

Prognosis Fair with early removal of eye

Treatment Excision of eyeball

PLATE 22



EPIBULBAR GROWTH (Papilloma with early signs of malignancy)

The growth in a man, aged sixty, had been present for two years. It was highly vascular and rather soft to the touch.

(With acknowledgements to Mr. I. D. Griffith.)

CARCINOMA LIMBUS CONJUNCTIVÆ

Synonym *Epibulbar carcinoma*

Symptoms Pale pink or grey-white growth, usually thin and flat at first, becomes warty later

Diagnosis Growth centred at limbus, extends over cornea and sclerotic Numerous large blood vessels pass to it Movable on surface in early stage

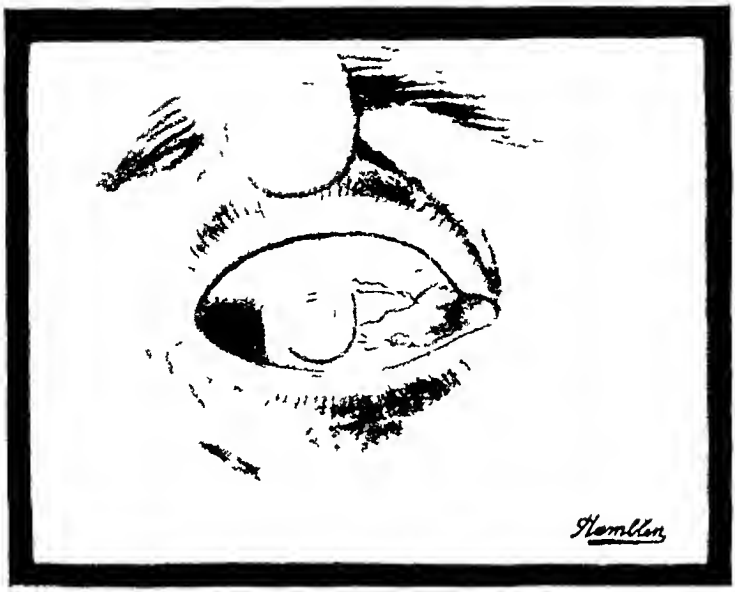
(*Cf*, a sarcoma which is usually dark brown, black or piebald)

Pathology Mass of epithelial type of cells at first lying on the cornea or sclerotic, and only after the growth has considerably enlarged, penetrating into these structures

Prognosis Serious

Treatment If not more than 5 mm in diameter and somewhat movable on the surface, remove by operation, taking thin layer of underlying sclera and cornea, and treat site with radium If of moderate size excise eyeball In the case of large growths, exenteration of orbit is advisable When associated with lymphatic gland enlargement, affected lymph glands should be excised as freely as possible

PLATE 23



CARCINOMA LIMBUS CONJUNCTIVÆ

The growth overlies the cornea and sclera, but it only involves the superficial layers of the cornea in its marginal part

(*With acknowledgements to Mr Charles B Goulden and Mr H B Stallard*)
(*Reported in Trans Ophth Soc*, 1932 *LII*)

HYPOPYON ULCER

Synonym *Serpiginous ulcer ulcus serpens*

Symptoms Lacrymation photophobia, pain blepharospasm, vision impaired

Diagnosis Ulcer stains green with drop of fluorescein solution (2 per cent) Lower part of iris completely obscured by collection of pus in anterior chamber

Ætiology Commonly among elderly persons from poorer classes Pneumococcus usually present, associated with lacrymal obstruction and a mucocele followed by trivial injury of cornea (*e g* grit in eye)

Pathology Superficial loss of substantia propria Infiltrated zone in neighbourhood of ulcer Cellular infiltration of iris and ciliary body Pus in anterior chamber

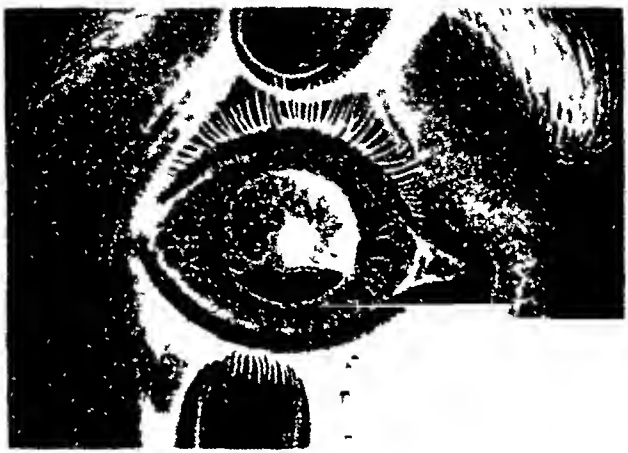
Complications May lead to panophthalmitis (requiring enucleation of eyeball), keratocele, perforation of cornea with possible incarceration or prolapse of iris and consequent leucoma adherens, corneal opacity

Prognosis Prospect of recovery of useful vision bad Considerable risk of loss of eye

Treatment (1) *General* Rest good food tonic general ultra-violet light therapy

(2) *Local* Frequent cleansing of eye with boric acid lotion Boric acid ointment at night Atropine sulphate drops 1 per cent t d (*N B* In elderly patients, note carefully the tension glaucoma may supervene) Pad and bandage, *except* when ulceration secondary to conjunctivitis then use dark glasses Application of heat (hot saline or dry heat) Cauterisation if ulcer extends by carbolisation, thermophore, or electro-cautery, corneal section

PLATE 24



HYPOPYON ULCER

The intensely congested eye with marked circumcorneal injection shows the ulcer in the temporal region and a large collection of pus in the lower part of the anterior chamber

(*From Handbook of Ophthalmology, by Norris and Williamson Notte*)

PHLYCTENULAR KERATITIS AND CONJUNCTIVITIS

Synonyms *Conjunctivitis eczematosa, C scrofulosa, C pustulosa*

Symptoms Redness, slight lacrymation In young children frequently photophobia, blepharospasm, lacrymation, when keratitis is present

Diagnosis One or more pinkish nodules (1 mm in diameter) at or near limbus, engorged blood vessels passing to them from the periphery Palpebral conjunctiva merely congested

Ætiology Occurs chiefly between ages of four and fourteen years Almost invariably hospital class of patient—particularly when debilitated Cause septic focus (especially tonsils and adenoids), rarely tuberculosis

Pathology Nodule of lymphocytes beneath conjunctival epithelium or beneath corneal surface—occasionally whole thickness of cornea

Course (*a*) Superficial phlyctenule on conjunctiva or at limbus, or

(*b*) Superficial phlyctenule on cornea

After few days, epithelium covering summit of nodule sloughs, leaving a *grey ulcer of cornea* (Drop of 2 per cent fluorescein reveals ulcer—yellow coloration if on sclerotic, green if on cornea) Ulceration erodes nodule until level, when floor becomes free from slough and is soon covered by epithelial growth

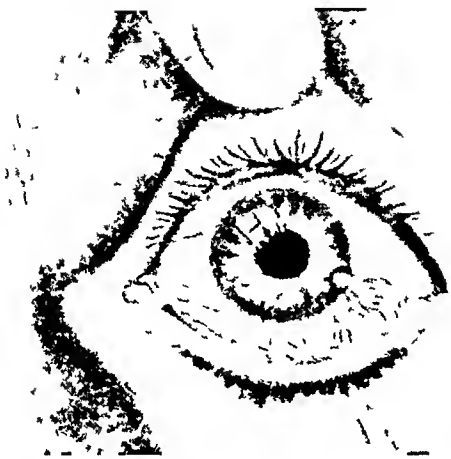
(*c*) Phlyctenule deep in cornea (most serious type)

When developing, raises corneal surface over it and leads to sloughing of surface and formation of deep ulcer—liable to perforate Phlyctenule of cornea heals after new-formed blood vessels have grown out to it from vessels at limbus If deep to Bowman's membrane, visible scar (and consequent dense corneal opacity) results with interference with vision if within pupillary area

Prognosis If protracted by formation of fresh phlyctenules large area of cornea may be traversed during several years Serious complications likely—corneal nebulæ, perforation of cornea, prolapse of iris with possible intraocular infection

Treatment (1) *General* Abundant plain food, fresh air, tonic (iron, arsenic or quinine), cod-liver oil Examination of teeth, tonsils, ears, nose and throat for septic focus General ultra-violet radiation (2) *Local* Boric acid lotion, oculentum acidi borici Special supervision to prevent, or treat perforation in deep corneal phlyctenule by operation

PLATE 25



PHLYCTENULAR KERATITIS AND CONJUNCTIVITIS

Several nodules with localised vascularisation are present on the conjunctiva and one on the cornea

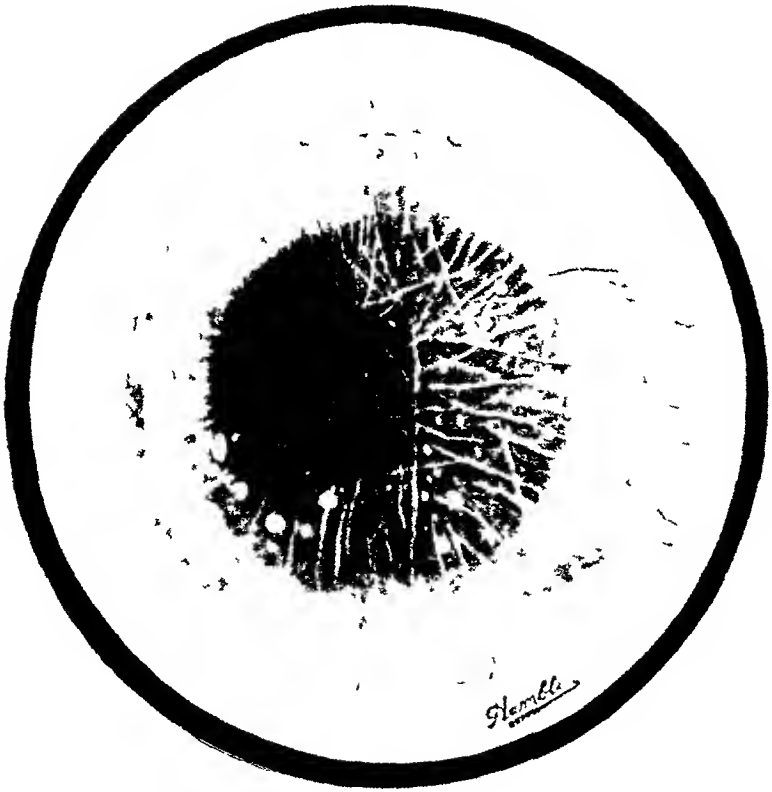
(*From "Handbook of Ophthalmology" by Neame and Williamson Noble*)

INTERSTITIAL KERATITIS

Synonym *Keratitis parenchymatosa (syphilitic)*

Symptoms Irritation, photophobia, lacrymation, some pain One eye affected—sooner or later becomes bilateral

Diagnosis Lacrymation, slight circum-corneal or ciliary congestion, cornea hazy, especially in periphery, giving "ground-glass" appearance, *corneal deep striation*, seen with magnifying lens by focal illumination as delicate grey lines, sometimes keratic precipitates and posterior synechiæ Vision perception of light W R usually positive, with other signs of congenital syphilis



CORNEAL DEEP STRIATION (Keratitis Striata)

In addition to the well-marked deep striation of the cornea, as seen under a magnification of about × 7 diameters, there are many "K P" spots, slight general corneal haze and a few deep vessels (in a case of interstitial keratitis) Deep striation is due to œdema of the substantia propria and consists in rucks or ridges formed in the deep surface of the cornea

Ætiology Usually a local manifestation of congenital syphilis, sometimes simulated by tuberculous keratitis Rarely an accompaniment of secondary stage of acquired syphilis (usually monocular)

Pathology Widespread infiltration (with groups of lymphocytes) and vascularisation of deeper layers of substantia propria

Course In turn, haziness, opacity, vascularisation by deep vessels which advance from margin to centre of cornea Opacity clears up slowly, centre of cornea remaining denser to the last

PLATE 27

INTERSTITIAL KERATITIS

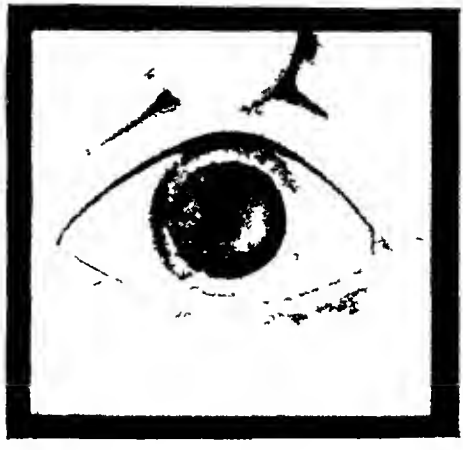
The drawing shows well-marked mottled corneal haze and fairly abundant deep corneal vessels (Approx. × 8 diameters)

Prognosis Fair in more than 50 per cent and bad in few cases as regards vision Hope of improvement in vision may be maintained up to three years Acute stage of active infiltration may last four to eight weeks Except in mildest cases, iritis or iridocyclitis present Chronic stage may last over a year Second eye affected later

Treatment *General* hygienic treatment (as for phlyctenular keratitis and conjunctivitis, Plate 25) Anti-syphilitic treatment advisable, though has little effect on inflammation, and does not prevent involvement of second eye

Local (*a*) One per cent atropine sulphate drops once or more daily (*b*) Heat (as for hypopyon ulcer Plate 24) (*c*) Dark glasses

PLATE 28



INTERSTITIAL KERATITIS (Nebula)

The eye shows slight ciliary congestion, but the corneal nebula has absorbed in the periphery. A deep vessel starting at the limbus is seen at 7 o'clock.

(*From Handbook of Ophthalmology by Norris and Williamson Noble*)

KERATIC PRECIPITATES ("K P"), CYCLITIS

Synonym *Keratitis punctata*

Symptom Mistiness of vision

Diagnosis With magnifying lens under oblique focal illumination, "K P" appear as grey-white dots on deep surface of cornea in lower quadrant, seen against background of pupil when eye is directed upwards In cyclitis, there may be ciliary or circum-corneal injection haze of aqueous humour, exudate in lower part of anterior chamber, vitreous floating opacities

"K P" = physical sign of paramount importance in cyclitis Cyclitis often occurs with iritis

Pathology Spots are composed of aggregations of small lymphocytes emanating from ciliary body and deposited on deep corneal surface

Course Commonly of long duration and liable to relapse

Complication Secondary glaucoma

Prognosis Cyclitis impairs function of ciliary body in nourishing lens, so that secondary cataract may result Duration of attack variable

Treatment *General* (1) Treat any focus of sepsis found

(2) Stimulation of excretion (aperients, hot-air baths, abundant fluid by mouth), mercury inunction, injections (tuberculin gonococcal or other vaccine where indicated), protein shock treatment sometimes successful

Local Vigorous dilatation of pupil, to prevent or break down posterior synechiæ, by atropine, atropine with cocaine, or hyoscine, dark glasses, dry or moist heat as for inflammation of the cornea

KERATIC PRECIPITATES ("KP"), CYCLITIS

A woman, aged forty, with a two years' history of misty vision

(With acknowledgments to Mr Norman L Fleming)

ARCUS SENILIS

Symptoms White line parallel with periphery of cornea

Diagnosis A complete ring in advanced cases Annular white corneal opacity separated from corneo-scleral junction by narrow band of almost clear cornea

Ætiology Common in elderly persons

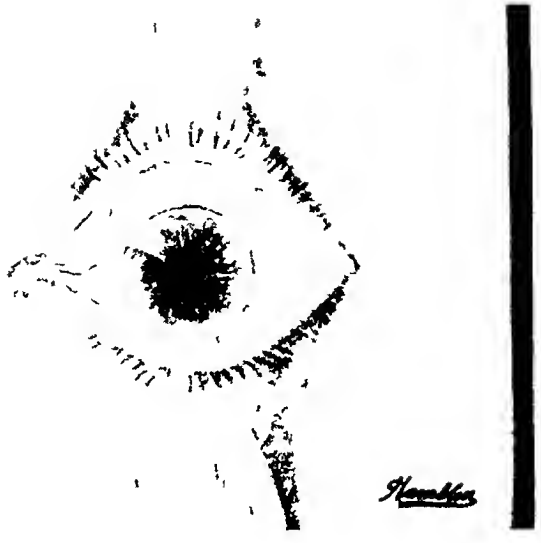
Pathology Deposition of fat globules in Bowman's membrane and in superficial layers of substantia propria

Course Begins in upper and lower quadrants and may extend all round

Prognosis No effect upon vision

Treatment None

PLATE 30



ARCUS SENILIS

There is a complete white ring opacity with the usual comparatively transparent marginal portion of cornea peripherally

PHTHISIS BULBI

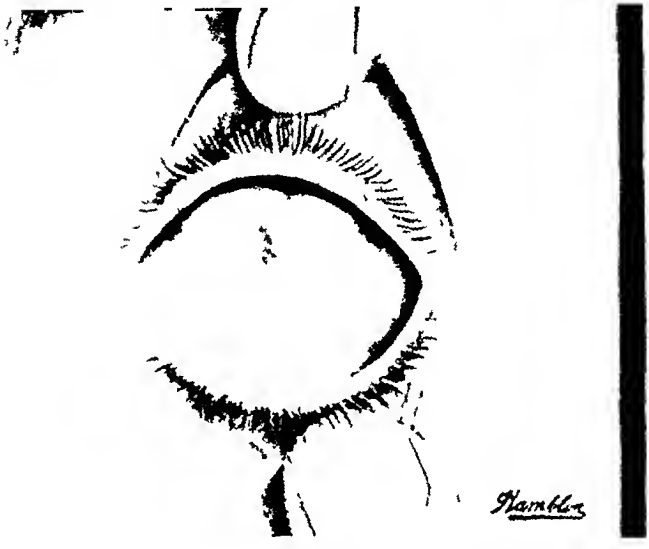
Synonym *Shrinkage of the eyeball*

Ætiology Due to prolonged inflammation, resulting from severe injury or inflammation of the eye In this case severe inflammation started at the site of a trephine operation performed about ten years previously The eye gradually became smaller with much reduction in tension

Pathology Section of such an eye shows extreme shrinkage of the vitreous cavity and its replacement by fibrous tissue The anterior chamber, also is obliterated After many years a deposit of bone takes place as a thin sheet in the choroid

Treatment Excision of the eye if painful or uncomfortable

PLATE 31



PHTHISIS BULBI

This followed a period of several months of inflammation of the eye starting at the site of a trephine operation performed about ten years previously

CORNEAL OPACITY FROM OPHTHALMIA NEONATORUM

(For description and treatment of Ophthalmia Neonatorum, see Purulent Conjunctivitis, Plate 11)

Diagnosis History of blindness from infancy Symmetrical dense corneal opacity, with vision almost completely destroyed in both eyes Irregular nystagmic movement of eyes

Ætiology The result of ulceration of the cornea in infancy through infection at or soon after birth

Pathology Destruction of corneal substance with replacement by new fibrous tissue which is always opaque The yellowish coloration is due to degenerative products, probably mainly cholesterin

PLATE 32

CORNEAL OPACITY FROM OPHTHALMIA NEONATORUM

An advanced and degenerate scar in both cornea in a man aged fifty. The vision was merely perception of light. The yellow colour indicates degenerative changes in the scar due to the formation of hyaline material or cholesterin

WAR INJURY—THE RESULT OF BURNS BY DICHLOR-ETHYL SULPHIDE

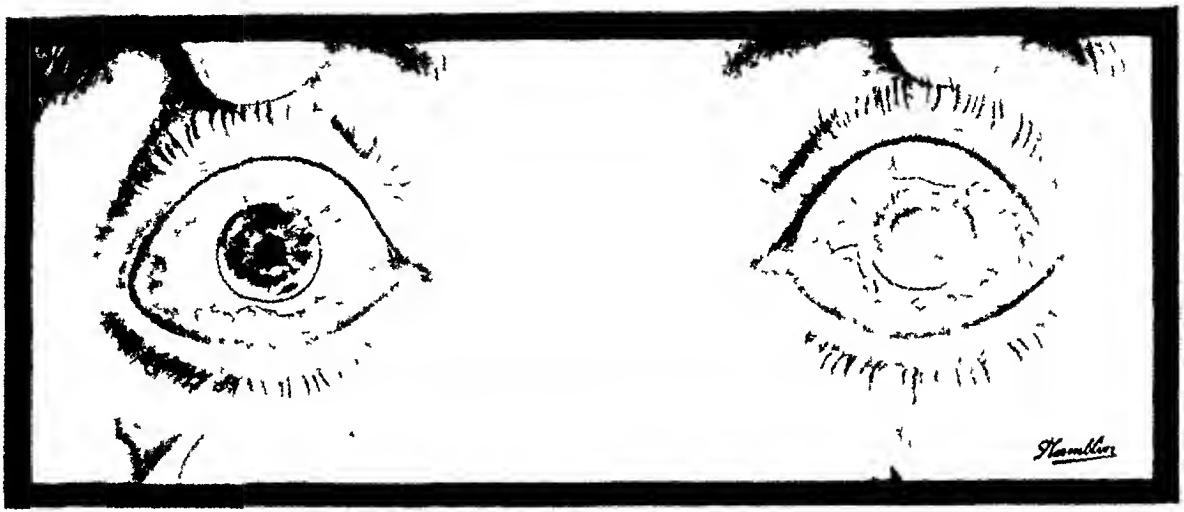
Synonym "*Mustard-gas*" *burn of cornea and conjunctiva* (*late stage*)

Diagnosis Chronic conjunctival congestion peripheral to a zone of conjunctival ischæmia Scar of corneal ulcer, or relapse of ulceration at site of depressed scar Cornea relatively insensitive

Ætiology Inflammation occurring as a result of exposure to dichlor-ethyl sulphide Corneal ulceration healed and then recurred ten years later (with hypopyon), the cornea being almost insensitive to cotton-wool

Prognosis Grave Complete loss of vision may occur from extension of ulceration or from perforation

Treatment Tarsorraphy



WAR INJURY—THE RESULT OF BURNS BY DICHLOR-ETHYL SULPHIDE

Male, aged forty years. The patient had been injured by "mustard gas" in 1918. He had been in regular work as a clerk for about ten years after discharge from the Army, when troublesome inflammation of the eye occurred, followed by a return of corneal ulceration with a hypopyon. The cornea was almost entirely without sensation to cotton wool. Vision was ultimately lost in the left eye.

(Case shown at the Royal Society of Medicine, Section of Ophthalmology, 1928.)

SCLERO-KERATITIS WITH IRITIS

Symptoms Pain tenderness deep blush-red coloration

Diagnosis Widespread scleral congestion the cornea being the subject of opacification in the neighbourhood of the affected sclera Iritis with posterior synechiæ present (for description see Plate 42) and sometimes episcleritis indicated by presence of episcleral nodule

Ætiology Caused by tuberculosis or syphilis occasionally by foeal sepsis Both eyes often affected not necessarily simultaneously

Pathology Swelling of affected sclera with intense cell infiltration which extends into cornea Giant-celled systems if due to tubercuiosis

Grey-white clouding of cornea accompanying infiltration is replaced in healing process by dense fibrous tissue thus producing porcelain-white corneal opacity (sclerosing keratitis)

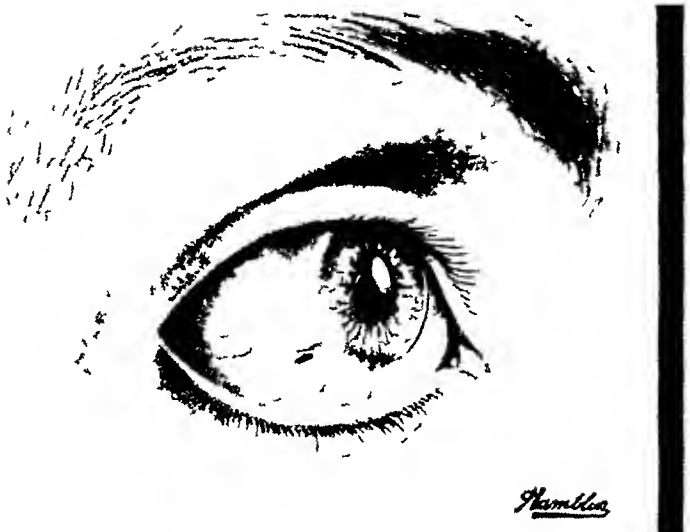
Course In later stages sclera attains a peculiar violet colour owing to thinning of this structure Occasionally bulging develops (staphyloma of sclera) though tension may remain normal

Prognosis Impairment of vision, depending on extent of corneal opacity Sometimes steadily progressive with loss of vision

Treatment Apart from general measures and treatment of cause if found, treatment is sometimes unavailing Iodides iron or tuberculin may be administered according to general condition Heat and leeches to temple to relieve pain

(For treatment of iritis see Plate 42)

PLATE 34



SCLERO KERATITIS WITH IRITIS

This was assumed to be of tuberculous origin in a female aged forty eight years In addition to the widespread congestion and prominence of the sclera on the temporal side, there is a small episcleral nodule at 8 o clock, slight corneal opacity on the temporal side and a posterior synechia

ATROPHY FOLLOWING SCLERITIS

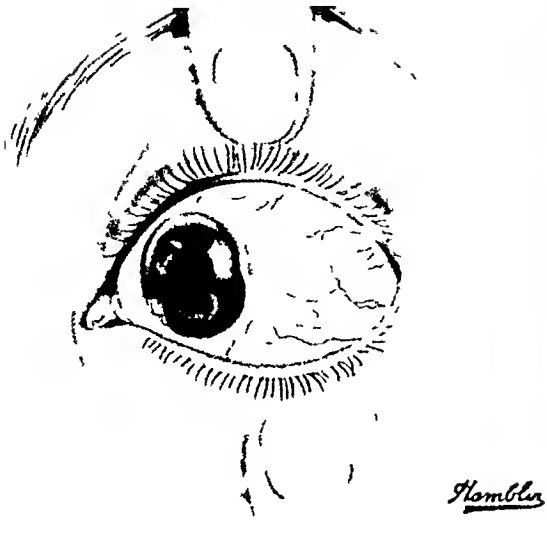
Signs Localised or diffuse blue coloration of sclerotic

Diagnosis Corneal nebulæ and bluish coloration of sclera after repeated attacks of inflammation of sclera (For description of active stages of this condition, see Plate 34)

Pathology The slate-blue area corresponds with the part of the sclera which is thinned as the result of past scleritis

Course Stationary, if no recurrence of scleritis occurs In severe cases staphyloma of sclera may occur

PLATE 35



ATROPHY FOLLOWING SCLERITIS

After two or three years of recurring scleritis and previous history of corneal ulceration, the appearance seen is of corneal nebula and a bluish coloration of the thin sclera

INTERCALARY AND CORNEAL STAPHYLOMA

Symptoms Localised bulging of cornea, with little or no vision

Diagnosis From ciliary staphyloma

Ætiology Complication of glaucoma after corneal wound or ulcer with prolapse of iris

Pathology In a case of corneal ulcer with perforation and prolapse of iris resulting, if inflammation eventually subsides without necessity for excision of the eye, the iris becomes incorporated in the scar tissue which replaces the cornea As tension of eye returns to (or exceeds) normal the scar tissue is stretched becoming markedly prominent and thus produces anterior staphyloma Intercalary staphyloma affects corneo-scleral junction

Course Stationary or slowly progressive

Treatment Enucleation of eyeball for pain or on account of unsightly appearance, or difficulty in closing the eye

PLATE 36

INTERCALARY AND CORNEAL STAPHYLOMA

Female, aged forty-one years. There was no perception of light. The history was uncertain

EQUATORIAL STAPHYLOMA

Symptoms Localised bulging of sclera in equatorial region local or widespread No perception of light (Note subsidiary ciliary staphylomata to the nasal side)

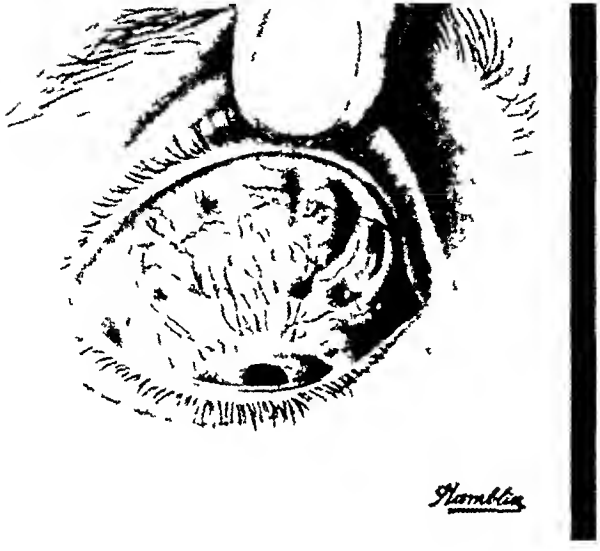
Diagnosis By irregular prominence of blue-black colour in equatorial region

Ætiology The result of yielding of the scars of wounds or inflammation of the sclera

Course Stationary or slowly progressive

Treatment Enucleation of eyeball for pain or on account of unsightly appearance

PLATE 37



EQUATORIAL STAPHYLOMA

A very prominent and widespread staphylomatous condition is seen, the result of secondary glaucoma in a female aged twenty. There was no perception of light

CAVERNOUS ANGIOMA OF SCLEROTIC

Signs Localised group of engorged blood vessels

Ætiology Congenital

Pathology Capillary or cavernous angioma

Prognosis Good if stationary Liable to extension

Treatment By electrolysis excision or cauterisation if any sign of extension

PLATE 38

CAVERNOUS ANGIOMA OF SCLEROTIC

The condition was present from birth and did not show any alteration during a period of nine years of observation up to the age of eleven

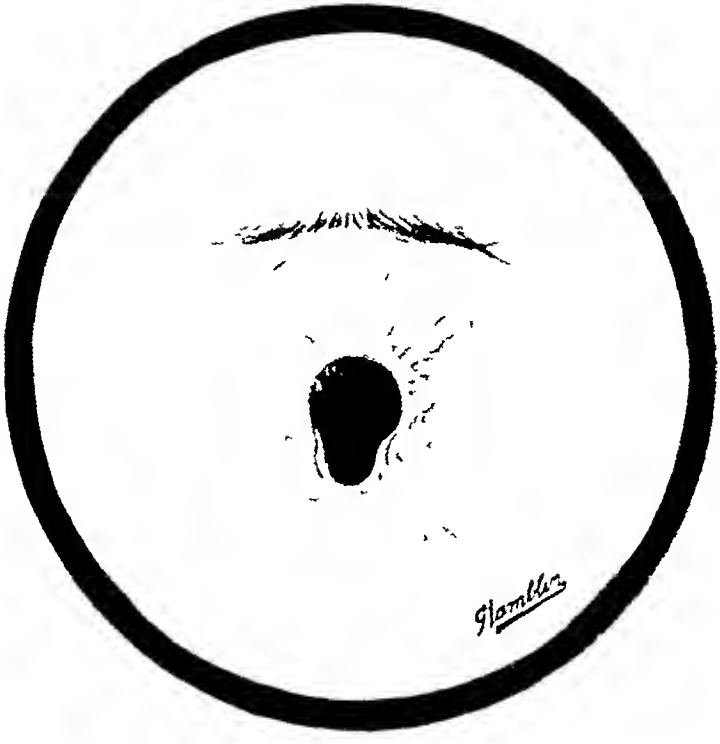
CONGENITAL COLOBOMA OF IRIS

Symptoms Vision of affected eye defective

Diagnosis A complete or part of a segment of the iris is deficient, so that the pupil is extended downwards

Ætiology Congenital Failure of closure of anterior part of choroidal fissure and lack of development of iris at this place or late disappearance of a vessel of vascular sheath of lens

PLATE 39



CONGENITAL COLOBOMA OF IRIS

Female aged forty. Both eyes were affected and in addition there was a coloboma of each choroid

CONGENITAL MELANOMATA OF IRIS

Diagnosis Pigmented nodules slightly raised above the level of surrounding stroma of iris casting a shadow when examined by oblique illumination

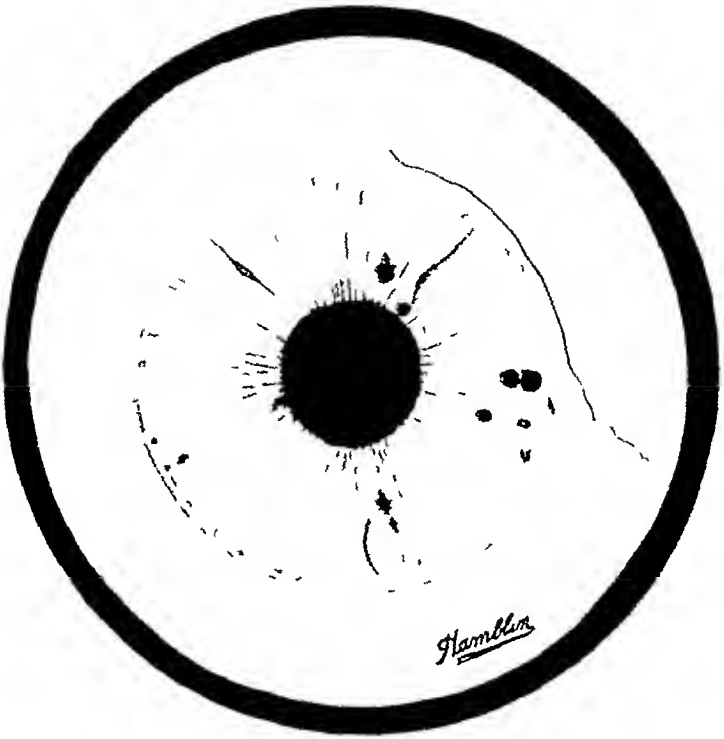
Pathology Masses of pigmented cells, probably mesoblastic in origin sometimes possibly derived from cells of optic cup (neural epiblast)

Course Condition stationary Rarely develop into melanotic sarcoma (or carcinoma)

Prognosis Good if stationary

Treatment If small but increasing in size, such a growth should be removed by iridectomy, or by enucleation of eyeball if large

PLATE 40



CONGENITAL MELANOMATA OF IRIS

Male, aged forty-six. Left eye. Several of the brown pigmented spots project above the level of the surrounding stroma of the iris and cast a shadow by oblique illumination

IMPLANTATION CYST OF IRIS

Symptoms and Signs Rounded swelling noticed by patient projecting forwards in front of iris Only after a lapse of many months is vision disturbed by encroachment of swelling upon the pupil Translucent or semi-transparent swelling projects forwards from the iris and on dilatation of the pupil is compressed against the back of the cornea Strands of iris stroma visible on anterior cyst wall

Diagnosis Rare condition recognised as cyst and not solid growth by translucency

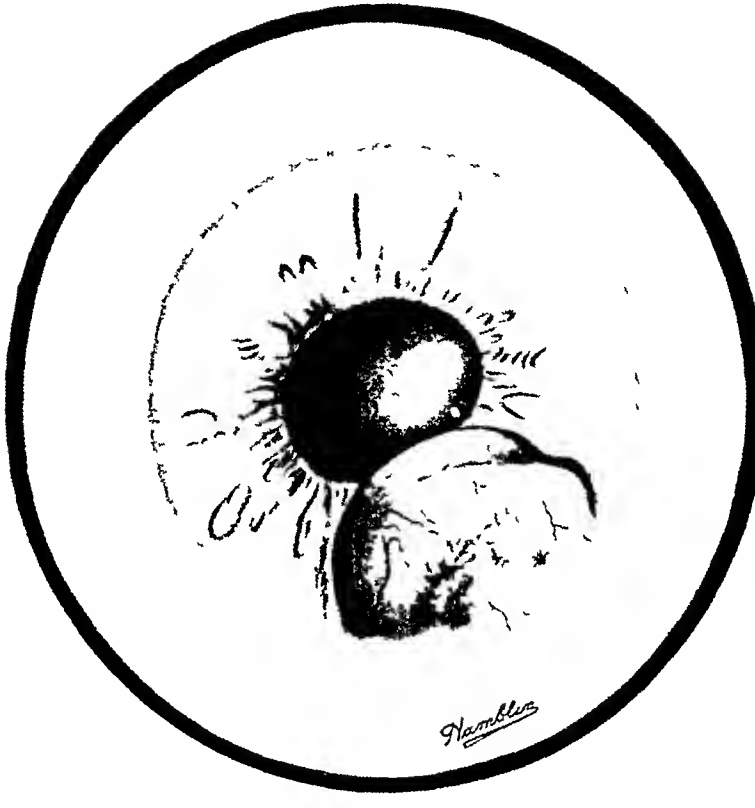
Ætiology Although no history of injury obtained in this case condition probably due to implantation by a penetrating foreign body

Pathology Section of an implantation cyst reveals one or more layers of epithelium considerably flattened, derived from the conjunctiva

Prognosis Gradual enlargement of cyst and ultimate glaucoma Liable to recur

Treatment Attempt to remove the cyst by iridectomy including the cyst through a keratome incision

PLATE 41



IMPLANTATION CYST OF IRIS

Male, aged twenty. When the pupil was slightly dilated, the cyst was pushed forwards into contact with the cornea. It had a semi-transparent appearance with very thin walls. Although there was no history of injury, it was presumed to be an implantation cyst.

SYPHILITIC IRITIS

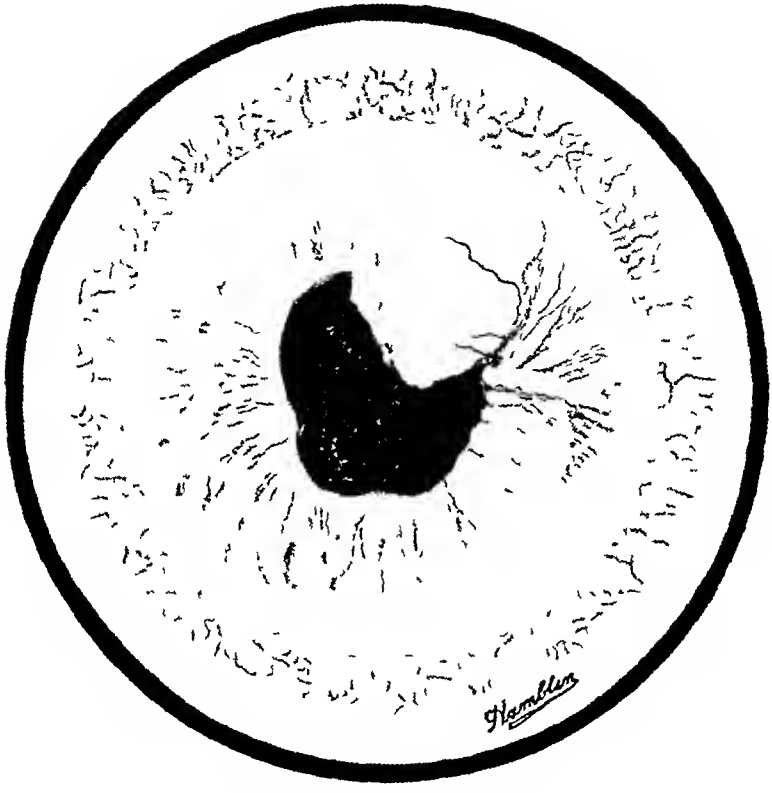
Symptoms Lacrymation photophobia redness pain

Diagnosis Circum-corneal or ciliary injection Small pupil reacting sluggishly becomes "festooned" after dilatation with mydriatic thus revealing presence of posterior synechiæ at site of which pigment spots are found on anterior surface of lens Discoloration of iris, blood vessels detected on its surface Yellow or pinkish nodule or nodules sometimes visible on anterior surface of iris, especially at pupil margin Pale yellow exudate in anterior chamber occurs in more severe cases From tuberculous nodular iritis by other evidence of syphilis history, Wassermann reaction

Ætiology Syphilis (congenital or acquired) Resolution under vigorous antisyphilitic treatment is rapid

Prognosis Good if treated early

Treatment Local treatment as for iritis General antisyphilitic treatment



SYPHILITIC IRITIS

Male, aged fifty seven Right eye There was a nine days' history of redness and pain A well-defined pinkish nodule is shown, with blood vessels passing on to its surface from the vascular iris Posterior synechiæ and pigment on the lens capsule are also present The nodule disappeared rapidly under the influence of antisyphilitic treatment

CONGENITAL DISLOCATION OF BOTH LENSES WITH CALCAREOUS DEGENERATION

Synonym *Congenital subluxation of lens*

Symptoms Defective vision

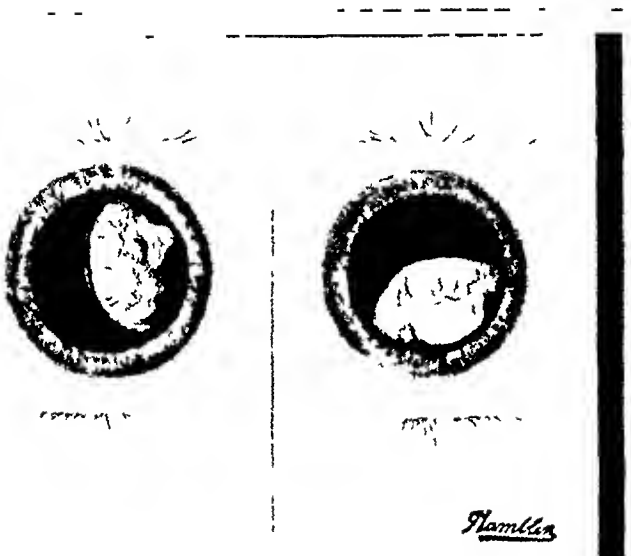
Diagnosis In congenital partial dislocation, the lens is generally displaced upwards The condition is usually discovered on examination of the eyes for defective vision and is readily recognised on dilatation of the pupil by the presence of the convex equator of the lens in the pupil

Ætiology Rare A familial complaint usually affecting both eyes

Prognosis Vision may be improved by suitable glasses

Treatment Discission of lens if vision is very defective and not markedly improved by glasses

PLATE 43



CONGENITAL DISLOCATION OF BOTH LENSES WITH CALCAREOUS DEGENERATION

The left eye with the more intensely white lens had been injured by a slight blow four days previously

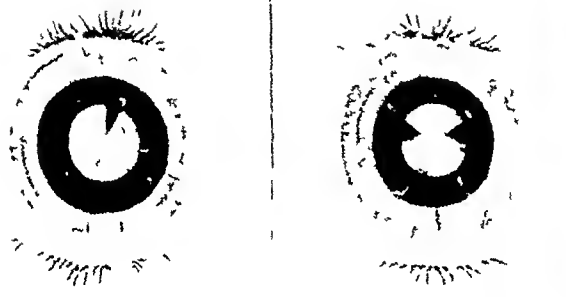
CONGENITAL CATARACT

(Lamellar type with nuclear opacities)

Description as for Plate 49

Dense nuclear opacity is present in both lenses with unusual sector-shaped gaps Superficial to these central opacities is a very delicate lamellar opacity with typical riders The nuclear opacities must have developed intra-utero the lamellar opacity may have been formed in early infancy

PLATE 44



CONGENITAL CATARACTS

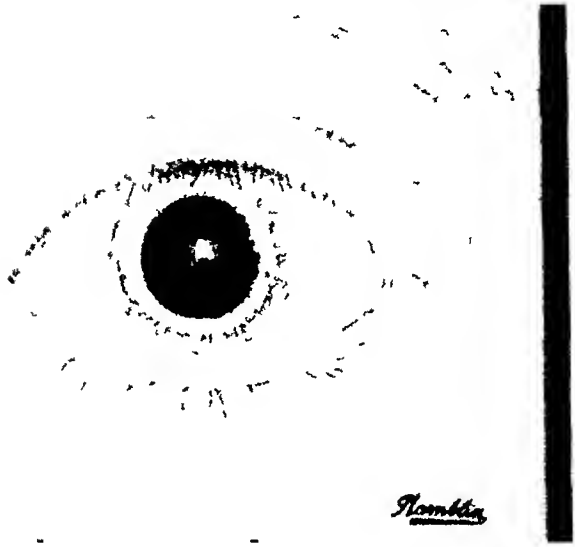
Rather small cataracts of lamellar type are present with dense nuclear opacities and unusual sector-shaped gaps

(With acknowledgements to Sir William Lister)

CONGENITAL ANTERIOR POLAR CATARACT AND PUPILLARY MEMBRANE

Cong ant polar cataract	*Pupillary membrane*
Signs Central white spot seen on lens from birth	
Diagnosis Dense white cataract commonly seen to project forwards from anterior surface of lens	Condition consists of delicate strands of tissue extending either from one part of anterior surface of iris to another or occasionally to anterior surface of lens (*cf* posterior synechiæ which pass from pupil margin to lens)
Ætiology Congenital (Sometimes secondary to corneal ulceration with perforation in infancy from ophthalmia neonatorum)	Congenital Persistence of fœtal anterior vascular sheath of lens which normally disappears a few weeks before birth
Course Stationary	
Treatment None required	None

PLATE 45



CONGENITAL ANTERIOR POLAR CATARACT AND PUPILLARY MEMBRANE

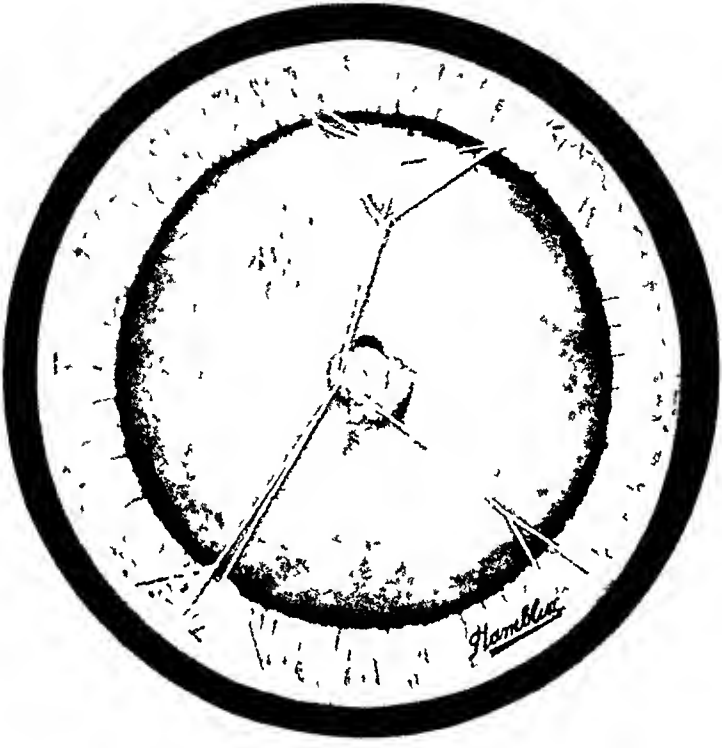
(With acknowledgments to Mr Rayner Batten)

CONGENITAL ANTERIOR POLAR CATARACT AND PUPILLARY MEMBRANE

(As examined with corneal miscroscope)

Cong ant polar cataract	*Pupillary membrane*
Signs Central white spot seen on lens from birth	
Diagnosis Dense white cataract commonly seen to project forwards from anterior surface of lens	Condition consists of delicate strands of tissue extending either from one part of anterior surface of iris to another or occasionally to anterior surface of lens (*c f* posterior synechiæ which pass from pupil margin to lens)
Ætiology Congenital (Sometimes secondary to corneal ulceration with perforation in infancy from ophthalmia neonatorum)	Congenital Persistence of fœtal anterior vascular sheath of lens which normally disappears a few weeks before birth
Course Stationary	
Treatment None required	None

PLATE 46



ANTERIOR POLAR CATARACT WITH PUPILLARY MEMBRANE

The dense white cataract, as seen with the corneal microscope, projects forwards in front of the anterior lens surface. The fibres of pupillary membrane arise from the anterior surface of the iris and pass to the cataract.

(With acknowledgements to Mr T. A. Williamson Noble.)

TRAUMATIC DISLOCATION OF LENS

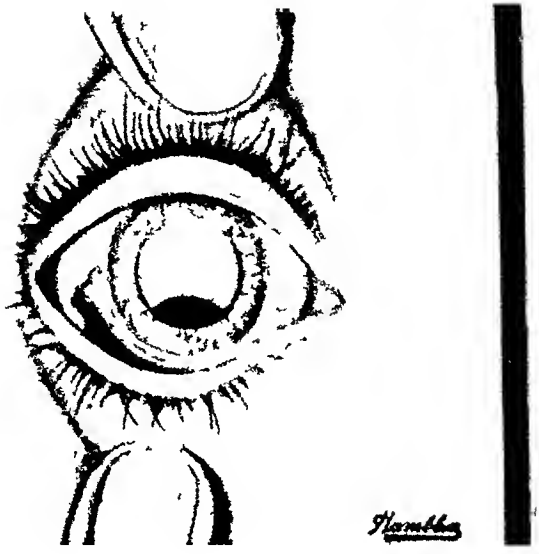
Symptoms Misty vision

Diagnosis Lens dislocated usually backwards and downwards into vitreous, as seen by ophthalmoscopic examination This causes iris to be tremulous Contusion of lids and subconjunctival hæmorrhage present in recent injury

Æthology Traumatic (eye received blow from heel of slipper) Complete dislocation of lens may occur (i) into the vitreous, (ii) into the anterior chamber, so as to occupy almost the whole of this cavity and push iris backwards, or (iii) through a rupture of the corneo-scleral junction into a subconjunctival position The rupture of the eye is, in such cases, in the usual situation near the corneo-scleral junction, upwards and inwards

Prognosis Uncertain Liable to acute or sub-acute glaucoma

PLATE 47



TRAUMATIC DISLOCATION OF LENS

The right eye received a blow from the heel of a slipper High myopia was present The vision without a lens was $\frac{6}{60}$ The left vision with $-20\ 0\ D = \frac{6}{18}$ Contusion of the lids and subconjunctival hemorrhage were also present (Ophthalmoscopic examination)

(With acknowledgments to Mr C Alston Hughes)

DISLOCATION OF LENS INTO ANTERIOR CHAMBER SECONDARY GLAUCOMA

This condition occurred in a man aged forty-nine years as the result of a blow on the eye by a piece of wood There was a history of some injury to the eye many years before The drawing represents the condition a fortnight after the last injury The extreme shrinkage of the lens must have taken place as a result of the original trauma In addition there were numerous corneal opacities

Present Condition Ciliary injection General corneal haze from epithelial œdema as the result of increased tension, shrunken calcareous lens in lower part of anterior chamber No view of fundus oculi owing to corneal opacity

Treatment Rest in bed Purgatives Leeches to the temple Hot bathing of the eye Eserine drops In the event of lack of improvement under this treatment, operation of extraction of the lens through a corneo-scleral section after preparation of a conjunctival flap There is considerable risk of loss of vitreous at this operation If the vision at the time of examination is reduced to nothing more than perception of light with faulty projection, the eye should be excised to relieve pain if a few days of palliative treatment have no effect

In the event of lens dislocation into the vitreous with subsequent glaucoma, the tension may be reduced by eserine drops, but if this prove unsuccessful homatropine may be used cautiously

DISLOCATION OF LENS INTO ANTERIOR CHAMBER SECONDARY GLAUCOMA

Male, aged forty-nine. There was a history of injury to the eye many years before. The condition as drawn was seen a fortnight after a blow from a piece of wood, but the lens no doubt had been injured on the previous occasion and had become opaque and shrunken. In addition to glaucomatous corneal haze, there were some corneal scars.

LAMELLAR CATARACT

Synonym *Zonular cataract*

Symptoms Vision defective when tested, but unless cataract of unusual density, defect undetected until examination of eyes takes place

Diagnosis By oblique focal illumination with pupil dilated, cataract seen as a central grey disc, more or less occupying the pupil Peripheral to cataract, pupil is clear and black except for few lighter grey *riders* Ophthalmoscopic examination reveals cataract as dark disc surrounded by ring of red fundus reflex, equatorial part being darker than centre, indicating that nucleus of cataract is little affected, if at all

Ætiology Rare Develops in utero or in infancy, probably the result of a toxæmia which affects at the same time the developing enamel organ of permanent incisor, canine and six-year molar teeth Both eyes usually affected

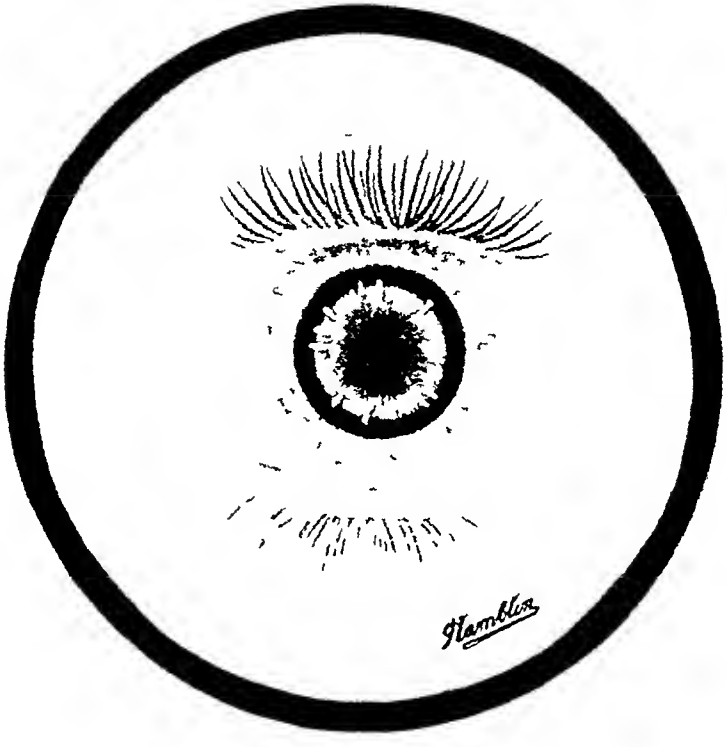
Pathology Opacity situated in a layer or layers between clear lens nucleus and cortex Present at a corresponding depth both in front of and behind the nucleus which it encloses Riders are V-shaped opacities, riding on equator of cataract, one limb passing in front and one behind

Course Usually stationary

Prognosis Depends on density of cataract

Treatment If vision less than 6/18 R and L eyes, discission in one eye at a time advised for a large cataract, optical iridectomy for a small cataract, in patients up to thirty years of age (the earlier, the better, to avoid defective vision from disuse) Discission always preferable, except in small opaque cataracts If detected after thirty years of age, extraction advised

PLATE 49



LAMELLAR CATARACT

The centre of the lens appears to be more transparent than the equatorial part of the cataract, indicating that the nucleus of the lens is but little affected, if at all. Clearly defined "riders" are present on the equator of the cataract

EARLY SENILE CATARACT

Synonym *Lens striæ*

Symptoms Complaint of seeing dark spots, lines or shadows, sometimes monocular diplopia Spots remain stationary when eye is kept at rest Progressive diminution of visual acuity or development of myopia Dazzling in bright light

Diagnosis (1) *Incipient Cataract* In majority oblique focal illumination reveals grey-white radiating lines, thicker towards periphery Ophthalmoscopic examination with pupil dilated shows opacities as dark lines against red reflex of fundus Movement of eyeball determines that opacity is within and not on anterior surface of lens, by parallax

(2) *Mature Cataract* Opacity involves whole cortex of lens Whole pupil dull grey or amber-coloured in focal illumination

Ætiology Degenerative change with age Heredity also a factor

Pathology Lens fibres shrink, becoming separated by fluid vacuoles, and are broken up Change often accompanied by alteration in refraction

Course (1) *Incipient Cataract* Lines of opacity multiply and coalesce completely obscuring red reflex Vision, hand movements or perception of light only Under oblique focal illumination when observer looks directly in front of cataractous eye, a crescent shaped shadow cast by iris on to opaque deeper parts of lens indicates transparency in superficial layers of lens cortex (*immature cataract*)

(2) *Mature Cataract* No transparent layer of cortex (as revealed by absence of shadow cast by iris described above) Extraction should be performed before *hypermaturity* is reached, in which all signs of lens pattern have disappeared (in focal illumination)

Indications for Operation on Senile Cataract (1) *Visual Defect* When both eyes affected the more advanced should not be operated upon until mature unless patient incapacitated by defective vision of better eye With monocular mature cataract, extraction performed for cosmetic reasons, to increase field of vision, or to prevent hypermaturity

(2) *Ocular Health* In incipient cataract, details of health of all parts of the eye should be noted for future reference as cataract later obscures view of fundus oculi

(3) *General Health* Nephritis or diabetes contra indicate operation, though in the latter, skilled medical attention may render patient fit for successful operation

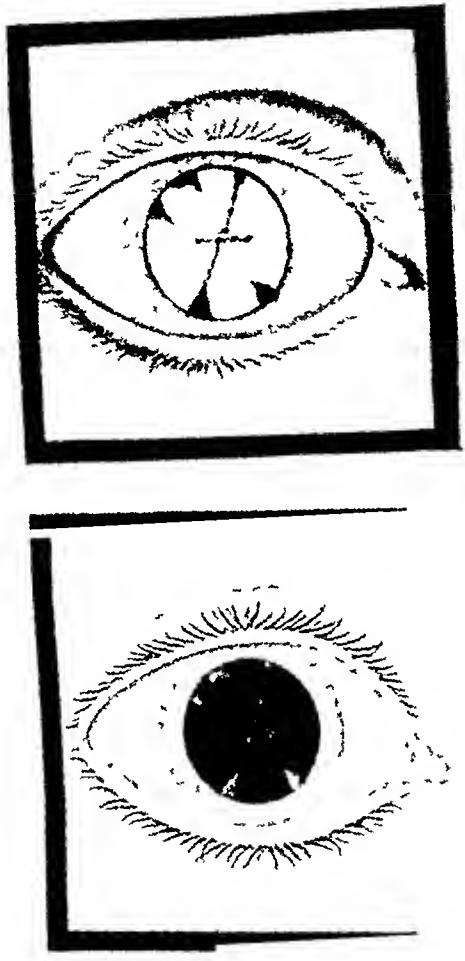
Prognosis Good or fair vision obtained in majority of cases

Treatment (1) Careful prescription of reading glasses, more frequent change required Telescopic spectacles useful

(2) When central part of pupil obstructed by opacity, trial may be made of atropine sulphate drops $\frac{1}{2}$ per cent, which may improve vision temporarily (*N B* Careful supervision required for fear of development of glaucoma)

(3) Cataract extraction when mature, or almost mature, except in special cases

PLATE 50



EARLY SENILE CATARACT

The drawings show the condition as examined by focal illumination and by direct ophthalmoscopy respectively

(*From 'Handbook of Ophthalmology' by Keame and Williamson Noble*)

SARCOMA OF CILIARY BODY

Synonym *Melanotic carcinoma*

Symptoms None in early stage Interference with vision later

Diagnosis Invisible in early stage Later, by extension behind iris towards pupil, may be seen, when pupil fully dilated, as a dark rounded mass Sometimes extends through root of iris and is visible in periphery of anterior chamber, causing D-shaped irregularity of pupil as in iridodialysis

Ætiology Very rare Usually between ages of forty and sixty years

Pathology A pigmented growth Usual cell structure that of spindle-celled sarcoma, sometimes that of "small round" variety Variable amount of fibrous tissue

Course Enlargement of variable rate

Prognosis Very grave Even after early enucleation of eyeball, recurrence may take place either locally or by metastasis

Treatment Enucleation of eyeball (after precaution of taking second expert opinion)

Complications Extension through coats of eyeball to surface over ciliary region Metastasis most commonly in liver or lungs

SARCOMA OF THE CILIARY BODY

The growth is seen, by direct ophthalmoscopy, as a dark slate blue mass obstructing part of the red reflex in the pupil, and also a small black mass has produced a localised iridodialysis by extending through the root of the iris into the anterior chamber

(With acknowledgements to Mr F A Williamson Noble)

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